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Valves, controls + systems

EN

Electromotive actuator
“Aktor M ST/2P/3P L”, 24 V
Operating instructions

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1. General information

The original operating instructions were drafted in German.

The operating instructions in other languages were translated from German.

1.1 Validity of the operating instructions

These operating instructions are valid for the electromotive actuator “Aktor M ST/2P/3P L” 24V, for “Cocon QTR/QFC” DN 40/50.

1.2 Type plate

The type plate is located on the bottom of the product.

1.3 Extent of supply

- “Aktor M ST/2P/3P L” 24V
- Operating instructions

1.4 Contact

Address

OVENTROP GmbH & Co. KG

Paul-Oventrop-Straße 1

59939 Olsberg

GERMANY

Technical service

Phone: +49 (0) 29 62 82-234

1.5 EU Declaration of conformity

Oventrop GmbH & Co. KG hereby declares that this product complies with the basic requirements and other relevant provisions of the EC Directives concerned.

The declaration of conformity can be obtained from the manufacturer.

1.6 Used symbols

	Important information and further explanations
▶	Action required
•	Enumeration
1. 2.	Fixed order. Steps 1 to X.
▷	Result of action

2. Safety-related information

2.1 Correct use

Safety in operation is only guaranteed if the product is used correctly.

The actuator may be used in indoor heating, ventilation and air conditioning systems.

Any other use of the product will be considered incorrect use.

Claims of any kind against the manufacturer and/or his authorised representatives, due to damages caused by incorrect use cannot be accepted.

The observance of the operating instructions is part of the compliance terms.

2.2 Warnings

Each warning contains the following elements:

Warning symbol SIGNAL WORD	
	Type and source of danger Possible consequences if the danger occurs or the warning is ignored. ▶ Possibilities of avoiding the danger.

Signal words define the seriousness of the danger which arises from a situation.

⚠ DANGER	
	Indicates an imminent danger with high risk. The situation will lead to death or serious injury if not avoided.

⚠ WARNING	
	Indicates a possible danger with moderate risk. The situation may lead to death or serious injury if not avoided.

⚠ CAUTION	
	Indicates a possible danger with low risk. It may lead to minor and reversible injury if the situation is not avoided.

NOTICE	
	Indicates a situation which may lead to damage to property if not avoided.

2.3 Safety notes

We have developed this product in accordance with current safety requirements.

Please observe the following notes concerning safe use.

2.3.1 Danger in case of inadequate personnel qualification

Any work on this product must only be carried out by qualified tradespeople.

As a result of their professional training and experience as well as their knowledge of the relevant legal regulations, qualified tradespeople are able to carry out any work on the described product professionally.

User

The user has to be informed by the qualified tradespeople as to the operation.

2.3.2 Risk of burns due to hot components and surfaces

- ▶ Allow the product to cool down before working on it.
- ▶ Wear suitable protective clothing to avoid unprotected contact with hot system components and fittings.

2.3.3 Availability of the operating instructions

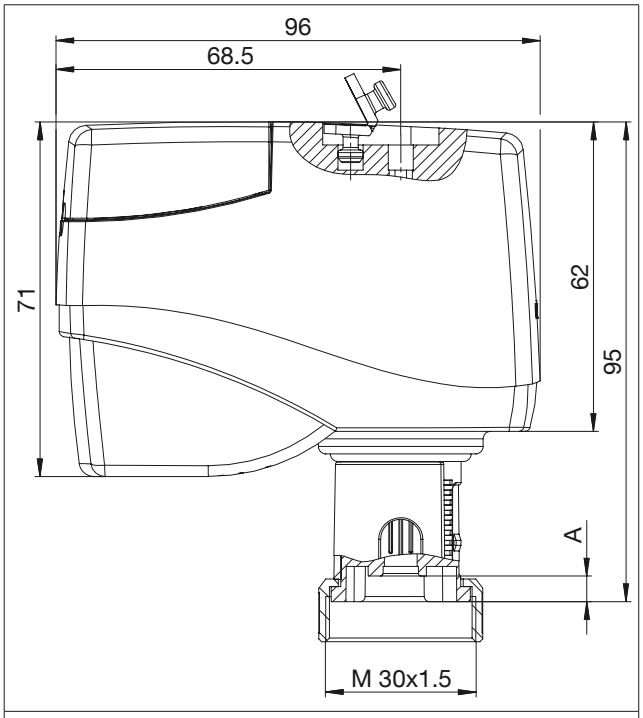
Any person working on the product has to read and apply these operating instructions and all other valid documents.

The operating instructions have to be kept at the installation location.

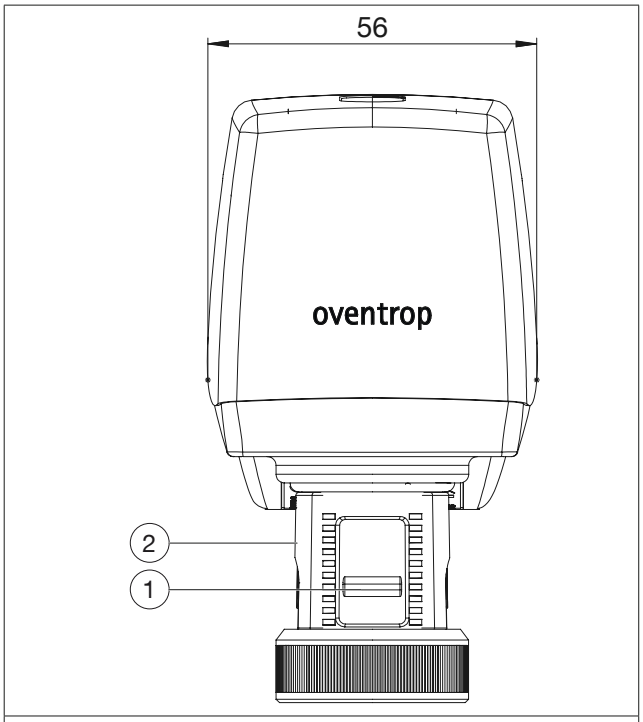
- ▶ Hand these operating instructions and all other valid documents over to the user.

3. Technical description

3.1 Construction



Illust. 1: Side view



Illust. 2: Front view

(1)	Push button for releasing the latched valve stem
(2)	Dust cover

3.2 Functional description

The actuator opens or closes the valve depending on the applied control voltage.

3.3 Technical data

Operating voltage	24 V AC ±10 %, 50/60 Hz 24 V DC ±10 %
Power consumption	Dimensioning: - 8.5 VA (24 V AC) - 4.1 W (24 V DC) Nominal: - 4.0 VA (24 V AC) - 1.9 W (24 V DC)
Start up load	Max. 10 A for short periods
Control	- Steady control 0(2)..10 V DC; < 0.5 mA, invertible - 3 point (open/stop/closed) - 2 point (open/closed)
Connection	Fixed pre-assembled cable 1,5 m; 5 x 0,5 mm^2
Motor deactivation	Drive stem: extending = electronically, retracting = electronically
Display	LED display for operating voltage and status
Travel noise	<28 dB (A)
Piston stroke	max. 10 mm
Floating time	22 s/mm
Operating power	500 N
Position indicator	Stroke scale
Position feedback	0..10 V DC; 5 mA for 0..100% travel; invertible
Manual setting	Only when the operating current is switched off! Adjustment stem for Allen key under the cover, spanner size 4 mm
Valve anti-blocking function	Optional activation
Characteristic line compensation	Optional activation
Permissible fluid temperature in the valve	0 -120 °C
Ambient temperature	0 - 50 °C
Relative air humidity	In operation: 0 - 85 %, not condensing

Protection class	IP54
Protective system	III according to EN 60730
Installation position	360°
Weight	320 g

4. Transport and storage

Temperature range	-0 °C - 50 °C
Relative air humidity	0 - 85 %, not condensing
Particles	Store dry and free from dust
Mechanical influences	Protected from mechanical agitation
Weather influences	Do not store outdoors
	Protect from direct sunlight
Chemical influences	Do not store together with aggressive fluids

5. Installation

5.1 Initial installation

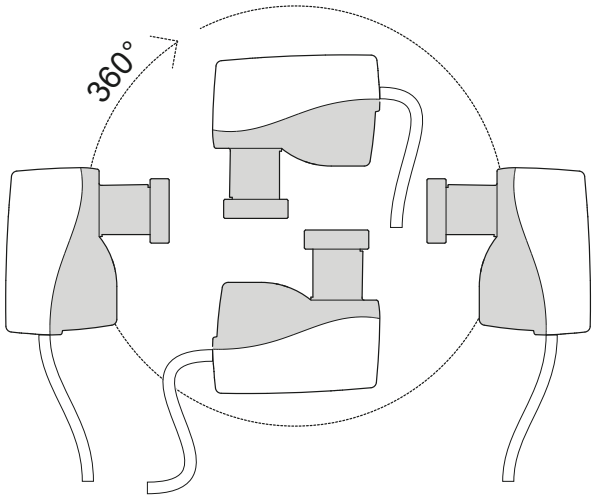
Make sure that there is enough space for the installation of the actuator.

CAUTION

Risk of burns due to hot components

An unprotected contact with hot components may lead to burns.

- ▶ Wear safety gloves.



Illust. 3: Installation position

1. Fit the adapter set to your valve according to the enclosed installation instructions.
2. Fit the actuator to the connection thread of the adapter.
3. Hand tighten the collar nut.

Avoid cross threading.

NOTICE

Damage to the actuator when tightening the collar nut with excessive torque

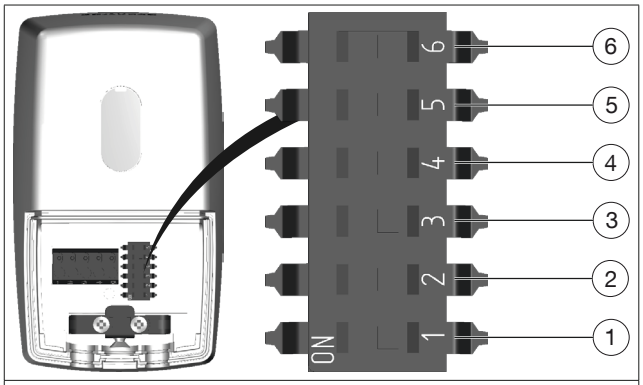
The actuator can be damaged and its be function impaired if the collar nut is over-tightened.

- ▶ Hand tighten the collar nut.

5.2 Commissioning

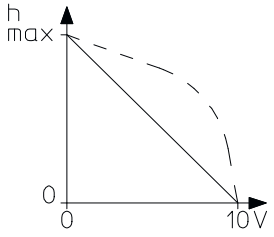
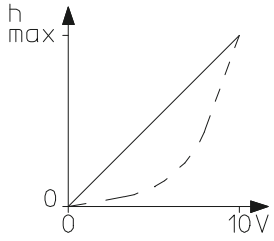
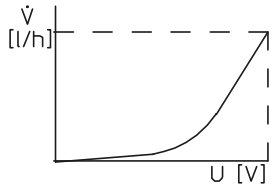
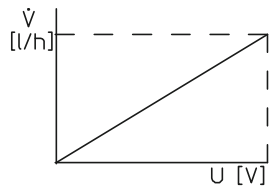
5.3 Configuration of the DIP switches

- ▶ Remove the casing cover.
- ▶ Configure the DIP switches.



Illust. 4: DIP switches

	ON	OFF
(1)	Valve anti-blocking function ON	Valve anti-blocking function OFF
	If installation conditions allow, the valve anti-blocking function can be activated during commissioning. The valve anti-blocking function will prevent sticking of the stem if the valve is not activated over a longer period, e.g. during the summer break of heating systems. If the valve anti-blocking function is activated, the stem will be moved for a few seconds, if no stroke lift is carried out within 10 days.	
	It is not possible to use the valve anti-blocking function during 3 point control!	

(2)	2....10 V DC	0.....10 V DC
	Control range of the steady control signal.	
(3)	Setting of the travel direction with a control voltage of 10 V DC	
	Travel direction and position feedback 100...0 %	Travel direction and position feedback 0....100 %
		
(4)	Equal percentage characteristic line	Linear characteristic line
		
(5)	Free	
(6)	When switching switch 6, the stored data for valve adaptation will be deleted and a new initialisation run will be triggered. During operation, an initialisation run will be triggered automatically every 7 days, if no upper or lower stroke position is approached during this period. The LED will flash green during initialisation.	

5.4 Connection of the power supply

NOTICE

Damage to the actuator due to operation in unmounted state

The actuator can be damaged and its function be impaired when operating the actuator electrically without valve.

- ▶ The actuator must only be connected to the power supply after installation.

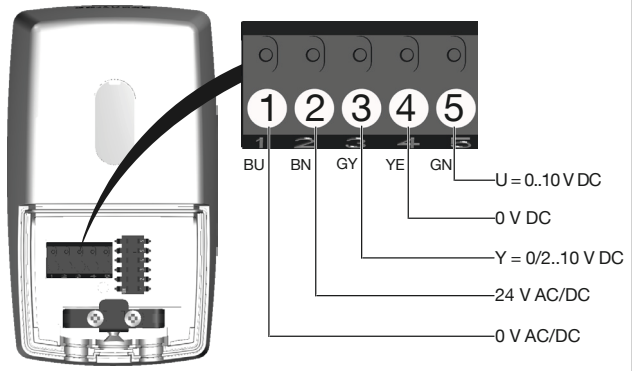
NOTICE

Damage to the control technology due to a high peak load when switching the actuator on

- ▶ Use switching components which are designed for a short-term peak load of up to 12 A.

- ▶ Completely disconnect the power supply.
- ▶ Carry out the desired assignment (see Illust. 5 to Illust. 7).
- ▶ Connect the power supply.
- ▷ After having connected the power supply for the first time, the actuator will carry out an initialisation run.
  The product will be ready for operation after initialisation.
- ▷ Protect the stroke position indicator by turning the dust cover (position (2) in Illust. 2) around by 180°.

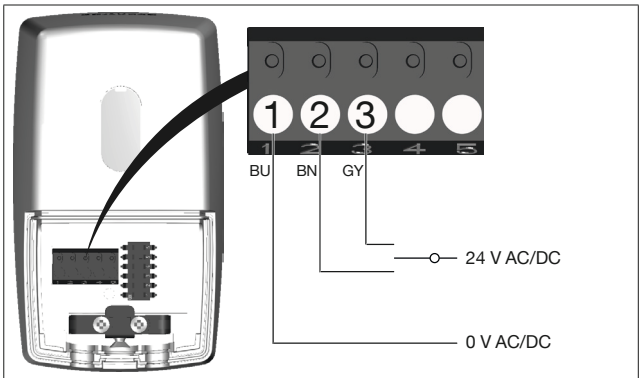
5.4.1 Steady control



Illust. 5: Pin assignment for steady control

(1)	0 V AC/DC	blue (BU)
(2)	24 V AC/DC	brown (BN)
(3)	Y = 0/2..10 V DC	grey (GY)
(4)	Position feedback 0 V DC	yellow (YE)
(5)	Position feedback 0..10 V DC	green (GN)

5.4.2 3 point control

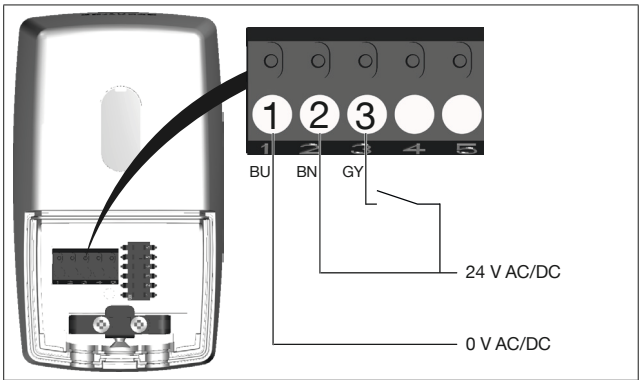


Illust. 6: Pin assignment for 3 point control

(1)	0 V AC/DC	blue (BU)
(2)	0 V or 24 V AC/DC	brown (BN)
(3)	0 V or 24V AC/DC	grey (GY)

The travel direction can be reversed by swapping the supply lines to terminal 2 and 3 at the actuator.

5.4.3 Control



Illust. 7: Pin assignment for 2 point control

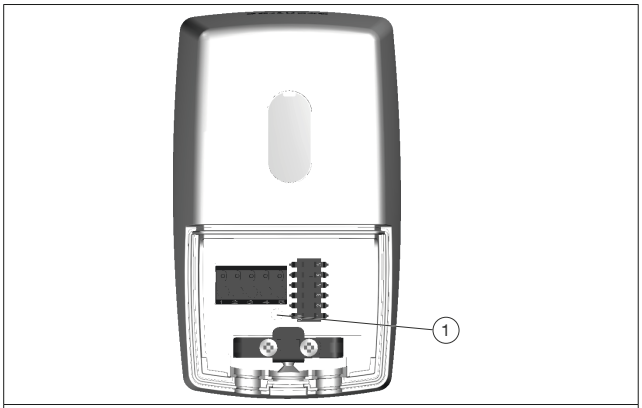
(1)	0 V AC/DC	blue (BU)
(2)	24 V AC/DC	brown (BN)
(3)	0 V or 24V AC/DC	grey (GY)

6. Operation

6.1 Control

The actuator is automatically controlled via the control technology.

6.2 Status LED



Illust. 8: Status LED

(1)	Status LED

Status LED	Meaning
Flashing green	Initialisation run
Lit green	Normal operation
Lit red	Valve blocking detected
Off	Operating voltage interrupted

6.3 Manual setting

NOTICE

Damage to the actuator due to manual positioning of the stem beyond the defined range

The actuator can be damaged and its function be impaired during manual setting.

- ▶ Only move the adjustment stem with little force.
- ▶ Turn the adjustment stem back by half a turn as soon as you feel a resistance in the upper or lower stroke position.

NOTICE

Damage to the actuator due to manual setting during electrical operation

The actuator can be damaged and its function be impaired when using the manual setting during electrical operation of the actuator.

- ▶ Completely disconnect the actuator from the power supply before using the manual setting.

1. Completely disconnect the actuator from the power supply.
2. Open the cover for manual setting (adjustment stem) (see position 2 in Illust. 9).
3. Move the actuator into the desired stroke position using a 4 mm Allen key.

The actuator has to be initiated after manual setting.

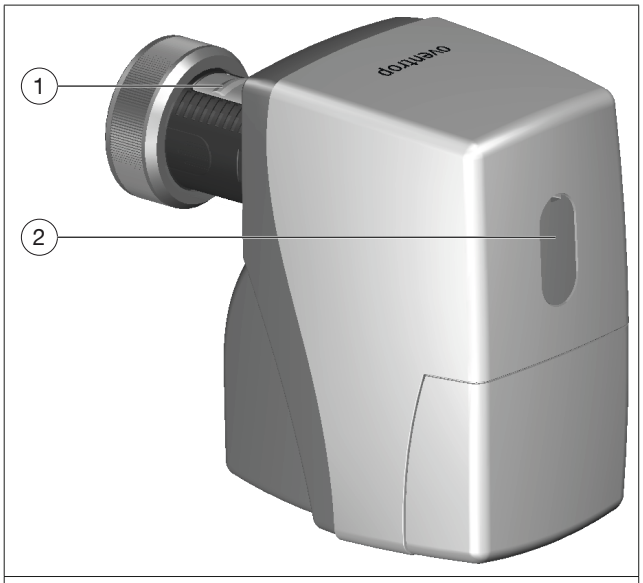
An initialisation run will be trigged:

- When switching DIP switch 6 (see Illust. 4).
- If a valve end position is approached during operation.
- After 7 days at the latest.

7. Maintenance

The actuator is maintenance-free.

8. Removal



Illust. 9: Stroke position indicator and valve stem cover

(1)	Stroke position indicator of the actuator
(2)	Cover for manual setting (adjustment stem)

CAUTION

Risk of burns due to hot components

An unprotected contact with hot components may lead to burns.

- ▶ Allow the product to cool down before working on it.

NOTICE

It may not be possible to unscrew the collar nut by hand

In some circumstances, the actuator closes the valve with the maximum actuating power of 500 N. In this case, the collar nut can no longer be unscrewed by hand.

- ▶ Do not use pliers or similar to loosen the collar nut!
- ▶ Use the manual setting option.

1. Make sure that no differential pressure is applied to the valve body.
2. Completely disconnect the actuator from the power supply.
3. Check the stroke position of the actuator.
4. If the actuator is not in the upper to medium stroke position, move the actuator into the medium stroke position with the help of the manual setting (see section 6.3).
5. Loosen the collar nut.
6. Press the push button to release the latched valve stem until stop and keep it pressed.
7. Remove the actuator from the valve.

Also remove the adapter set if you do not require it any longer for this valve.

9. Reinstallation

The actuator must not be in the lower stroke position for correct installation.

1. Before reinstallation, move the actuator to an upper to medium stroke position with the help of a control signal or the manual setting (see section 6.3).
2. Install the actuator as described in section 5.
3. Put the actuator into operation as described in section 5.2 .
4. Trigger an initialisation run by switching DIP switch 6 (see Illust. 4).

▷ The actuator is ready for operation.

10. Disposal

Guideline 2012/19/EU WEEE:

Waste electrical and electronic equipment (WEEE) must not be disposed of with domestic waste, but must be dropped off at a collection point for the recycling of electrical and electronic appliances.

NOTICE

Risk of environmental pollution

Incorrect disposal (for instance with the domestic waste) may lead to environmental damage.

- ▶ Packaging material is to be disposed of in an environmentally friendly manner.
- ▶ Components are to be disposed of professionally.

If no return or disposal agreement has been made, the product has to be disposed of.

- ▶ If possible, the components are to be recycled.
- ▶ Components, which cannot be recycled, are to be disposed of according to the local regulations. Disposal with the domestic waste is inadmissible.

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